NRM MISC

RP-NRM
TIMBER CONVERSION
Grades and Specifications
Ties

REVIEW OF CROSS-TIE SPECIFICATIONS

October 15, 1943

These are the latest cross-tie specifications, as well as the prices in effect at the present time as furnished to us by the following railway companies:

Chicago, Milwaukee, St. Paul and Pacific Railroad Company
Great Northern Railway Company
Northern Pacific Railway Company
Spokane International Railroad Company
Union Pacific Railroad Company

Information compiled by the
Division of Forest Products, Northern Rocky
Mountain Forest and Range Experiment Station
Missoula, Montana

CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC RAILROAD COMPANY

Specifications for Western Cross Ties

(Information from C. S. Finlayson, Ass't Purchasing Agent, Seattle, Washington)

On May 22, 1943, when RMPR No. 284 became effective, this company discontinued its specifications dated March 7, 1929 and adopted the American Railway Engineering Association specifications, under which ties purchased in Idaho and Montana are now procured.

KINDS OF WOOD Before manufacturing ties, producers shall ascertain which of the following kinds of wood suitable for cross ties will be accepted: Douglas-fir, larch, ponderosa pine, and lodgepole pine.

QUALITY All ties shall be free from any defects that may impair their strength or durability as cross ties, such as decay, large splits, large shakes, large or numerous holes or knots, grain with a slant greater than one in fifteen. Ties shall be of compact wood throughout the top fourth of the tie, where any inch of radius from the pith shall have six or more rings of annual growth.

DIMENSIONS Ties shall be 8 feet long. (For size requirements of Standard Grades 1 to 5 inclusive, see those listed under Northern Pacific Railway specifications, which also conform to those of the A.R.E.A.).

MANUFACTURE All ties shall be straight, well hewed or sawed, cut square at the ends, have bottom and top parallel and bark entirely removed.

INSPECTION (For definitions of limiting defects, acceptable variations in length or thicknesses and width of ties, see Northern Pacific Railway specifications, which conform to those of the A.R.E.A.)

PRICES (Quoted from letter by C.S. Finlayson, Assistant Purchasing Agent, Seattle, Washington)

> "We are paying ceiling price of $28.50 per M, f.o.b. our track. The quantity of ties has no bearing on the price in the area where we purchase our ties, and we pay the same to the large and small producer."

GREAT NORTHERN RAILWAY COMPANY

(Information from A. N. Crenshaw, Purchasing Agent, St. Paul, Minnesota)

Specifications for Cross Ties

KINDS OF WOOD. White fir, larch, ponderosa pine, and lodgepole pine.

QUALITY. All ties shall be made from sound, live timber, free from any defects that may impair their strength or durability as cross ties, such as decay, pitch seams, splits, shakes, holes, large or numerous knots, grain with slant greater than one in fifteen, or other imperfections.

A large knot is one exceeding in width more than one-fourth of the width of the surface on which it appears, but such a knot may be allowed if it occurs outside of the sections of the tie between 20 inches and 40 inches from its middle. Numerous knots are any number equaling a large knot in damaging effect. A shake is a separation of one ring of annual growth from another. A split is a break across annual rings. Ties having such defects will not be accepted.

MANUFACTURE. All ties shall be straight, well hewed, slabbed or sawed, cut square at the ends, and have bottom and top parallel. All hewed and slabbed ties must be peeled entirely free of bark. No ties will be accepted having the pith or heart in any corner.

DIMENSIONS. Ties of Grades 3, 4, and 5 shall be 8 feet 6 inches long. All ties shall measure as follows throughout both sections between 20 and 40 inches from the middle of the tie:

Grade	Sawed top, bottom, and sides	Sawed or hewed top and bottom
1	6" thick x 7" wide, 6" face 1/	6" thick x 6" wide on top 1/
2	6" thick x 7" wide on top 1/	6" thick x 7" wide on top 1/
3	6" thick x 8" wide on top	(6" thick x 8" wide on top (7" thick x 7" wide on top
4	7" thick x 8" wide on top	7" thick x 8" wide on top
5	7" thick x 9" wide on top	7" thick x 9" wide on top

1/ Note: Grades 1 and 2 ties accepted only by special agreement.

Variations in lengths, thicknesses, and widths will be allowed as follows:

Length: 2 inches over and 1 inch under the designated length.
Thickness: 1/2 inch over and 1/8 inch under the designated thickness.
Width: 3 inches over and 1/8 inch under the designated width.

PRICES. (Quoted from Mr. A. N. Crenshaw's letter of September 25, 1943) "Effective May 1, 1943 our tie prices were increased to the following basis, delivered on the right of way.

Grade	Price
1	$0.53
2	0.62
3	0.86
4	1.01
5	1.20

This is on basis of the maximum price to contractors, as allowed under the Office of Price Administration, Maximum Price Regulation No. 284."

NORTHERN PACIFIC RAILWAY COMPANY

(Information from H. J. Harms, Ass't to Purchasing Agent, St. Paul, Minnesota)

Specifications for Cross Ties

KINDS OF WOOD Before manufacturing ties, producers shall ascertain which of the following kinds of wood suitable for cross ties will be accepted: Douglas-fir, hemlock, ponderosa pine, larch and lodgepole pine.

QUALITY All ties shall be free from any defects that may impair their strength or durability as cross ties, such as decay, large splits, large shakes, large or numerous holes or knots. Ties shall be of compact wood throughout the top one-fourth of the thickness with not less than six rings of annual growth in any inch of any radius from the pith.

DIMENSIONS Before manufacturing ties, producers shall ascertain which of the following lengths, shapes, or sizes shall be accepted, and whether ties are to be hewed or sawed, and in either case whether on the sides as well as on the top and the bottom.

All ties shall be 8 feet long except size 5, which shall be 8 feet 6 inches long.

All ties shall measure as follows throughout both sections between 20 and 40 inches from the middle of the tie:

Grade	Sawed or hewed top, bottom, and sides	Sawed or hewed top and bottom
1	6" thick x 7" wide, 6" face[1]	6" thick x 6" wide on top[1]
2	6" thick x 7" wide on top[2]	6" thick x 7" wide on top[2]
3	6" thick x 8" wide on top	(6" thick x 8" wide on top (7" thick x 7" wide on top
4	7" thick x 8" wide on top	7" thick x 8" wide on top
5	7" thick x 9" wide on top	7" thick x 9" wide on top

1/ None accepted
2/ Accepted only by special agreement

MANUFACTURE All ties shall be straight, well hewed or sawed, cut square at the ends, have bottom and top parallel, and have bark entirely removed.

INSPECTION Ties will be inspected after delivery at suitable and convenient places satisfactory to the railroad, which reserves the right to inspect ties at points of shipment or at destination.

Inspectors will make a reasonably close examination of the top, bottom, sides, and ends of each tie. Each tie will be graded independently without regard for the grading of others in the same lot. Rafted or boomed ties too muddled for ready examination will be rejected. Ties handled over hoists shall be turned over as inspected.

A large hole is one more than 1/2" in diameter and 3" deep within, or more than 1" in diameter and 3" deep outside the sections of the tie between 20" and 40" from its middle. Numerous holes are any number equaling a large hole in damaging effect. Such holes may be caused in manufacture or otherwise.

A large knot is one exceeding in width more than one-fourth of the width of the surface on which it appears; but such knot may be allowed if it occurs outside the sections of the tie between 20" and 40" from its middle. Numerous knots are any number equaling a large knot in damaging effect.

A shake is a separation of one ring of annual growth from another. One which is not over 4" long or 1/4" wide will be allowed.

A split is a break across annual rings. One which is not over 5" long will be allowed provided satisfactory anti-splitting devices have been properly applied.

A tie will be considered straight: (1) When a straight line along the top from the middle of one end to the middle of the other end is entirely within the tie; (2) When a straight line along a side from the middle of one end to the middle of the other is everywhere more than 2" from the top and the bottom of the tie.

A tie is not well hewed or sawed when its surfaces are cut into with score marks more than 1/2" deep or when its surfaces are not even.

The top and bottom of a tie will be considered parallel if the difference in the thicknesses at the two sides or ends does not exceed one-half (1/2) inch; that is, one side may be seven and one-quarter ($7\frac{1}{4}$) inches while the other is six and three-quarters (6-3/4) inches wide; or one end may be six and three-quarters (6-3/4) inches while the other is seven and one-quarter ($7\frac{1}{4}$) inches thick.

The thicknesses and widths specified are the minima for the standard sizes. Ties over two (2) inches longer will be rejected, but occasional ties not more than one (1) inch shorter will be accepted. Ties over one (1) inch thicker or wider than the standard sizes will be rejected.

All thicknesses and widths apply to the sections of the tie between 20" and 40" from the middle of the tie. All determinations of width will be made on the top of the tie, which is the narrower of the horizontal surfaces.

PRICES (Quoted from letters by Assistant to Purchasing Agent, St. Paul, Minnesota)

"Since May 22, 1943, when the Office of Price Administration's Revised Price Regulation 284 became effective, the price of red and yellow fir (Douglas-fir) larch, ponderosa pine, and lodgepole pine ties has been $28.50 per M, f.o.b. cars. Hemlock and white fir ties, $1.00 less per M. That is the price that we are offering and is the price being paid to all producers depending on the quantity of ties they can deliver."

SPOKANE INTERNATIONAL RAILROAD COMPANY

(Information from T. F. Murphy, Purchasing Agent, Spokane, Washington)

Specifications for Cross Ties

KINDS OF WOOD Douglas-fir and larch.

QUALITY Ties must be of good, sound, live timber, free from any defects that will impair their strength or durability as cross ties, such as decay, large splits, large shakes, or large knots.

MANUFACTURE Grades 1, 2, and usable rejects must be exactly eight (8) feet long, with ends sawed square, peeled, well hewed on both sides, free from score hacks, of uniform thickness, hewed parallel, and out of wind.

DIMENSIONS All ties shall measure as follows throughout both sections between 20 and 40 inches from the middle of the tie:

Grade	Sawed top, bottom, and sides	Sawed or hewed top and bottom
1	7" thick x 9" wide on top	7" thick x 9" wide on top
2	6" thick x 8" wide on top	6" thick x 8" wide on top

Ties over eight (8) inches thick or eleven (11) inches on the face will not be accepted. Ties two inches over or two inches under the specified length of eight feet will be degraded or rejected.

The company will not accept to exceed ten percent of No. 2 ties at any one inspection. Inspection will be made on the small ends. No peeling will be allowed on right of way.

PRICES (Quoted from letter by Mr. Murphy):

> "This company is paying the ceiling price of $28.50 per M feet b.m. for our No. 1, 7" x 9" x 8' cross tie and 45 cents for our No. 2, 6" x 8" x 8' cross tie."

UNION PACIFIC RAILROAD COMPANY

EASTERN OREGON AND SOUTH IDAHO DISTRICT

(Information from H. Weindel, Purchasing Agent, Salt Lake City)

Specifications for Cross Ties

Sawed Ties

KINDS OF WOOD Douglas-fir, larch, lodgepole pine, and ponderosa pine.

QUALITY Ties must be sawed out of sound, straight, live timber, and must be free from bark, splits, shakes, cross grain, loose or decayed knots, pitch seams, or any other imperfections which may impair their strength or durability.

DIMENSIONS Ties must be seven (7) inches thick, nine (9) inches wide, and eight (8) feet long. For No. 1 ties a variation of one inch over in length, one-half inch over in thickness, and two inches over in width will be permitted. Ties slightly undersized (not exceeding one (1) inch in length, one-half (1/2) inch in thickness or one-half (1/2) inch in width) also those with not to exceed one inch of wane on two sides, or other imperfections which in the judgment of the inspector will not impair their durability will be accepted as No. 2 ties, to a limited extent.

Cull ties will be accepted only by special agreement.

The above specifications are in accordance with Form 2757 issued by the Union Pacific Railroad Company.

PRICES PAID F.O.B. CARS (Quoted from letter by Mr. Weindel):

> "We are paying the ceiling price of $28.50 per M feet b.m., f.o.b. cars, for No. 1, 7" x 9" x 8' cross ties, to all producers, regardless of the quantity of ties they can deliver, and the No. 2 ties are accepted at 10 cents less per tie than the No. 1 ties. Prices paid are the same in both the so-called Oregon Short Line and O.W.R. & N. territories."

UNION PACIFIC RAILROAD COMPANY

NORTHWEST DISTRICT WHICH INCLUDES INLAND EMPIRE

(Information from E. L. Fries, General Purchasing Agent, Portland, Oregon)

Specifications for Cross Ties

KINDS OF WOOD Red or yellow fir (Douglas-fir), larch, and pine.

QUALITY Ties are purchased as per specifications for "Select Ties" under paragraph 205 of West Coast Lumbermen's Association Grading Rules No. 11, dated January 1, 1941, which reads as follows:

> "SELECT TIES - Must be sound, square-edged, not less than six annual rings per inch, on any radius from the pith, over the top one-fourth of the tie. Will admit:
>
> "Knots - sound tight, 1/4 width of face.
> Checks - seasoning.
> Pitch pockets.
> Sap - not limited.
> Variation in length - 1" under or over.
> Variation in size - 1/8" under, 1/2" over."

DIMENSIONS Ties shall be seven (7) inches thick, nine (9) inches wide, and eight (8) feet long.

PRICES PAID F.O.B. CARS (Quoted from letter by Mr. Fries):

> "We are paying full ceiling price to producers in the Inland Empire district with no discrimination as between large and small operators. In my opinion, this has resulted in a slight increase in deliveries so far during the current year."